TL500A

BLACK BOX NETWORK SERVICES

Phone Line Sharing Device Programming Manual

Out-of-band network switch and call router—
eliminate up to four phone lines.

Customer Support Information

Order toll-free in the U.S.: Call 877-877-BBOX (outside U.S. call 724-746-5500) FREE technical support 24 hours a day, 7 days a week: Call 724-746-5500 or fax 724-746-0746 • Mailing address: Black Box Corporation, 1000 Park Drive, Lawrence, PA 15055-1018 • Web site: www.blackbox.com • E-mail: info@blackbox.com

Trademarks Used in this Manual

Black Box and the Double Diamond logo are registered trademarks of BB Technologies, Inc.

Any other trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

Normas Oficiales Mexicanas (NOM) Electrical Safety Statement INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.

5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.

6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.

7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.

8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.

9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18. Servicio por personal calificado deberá ser provisto cuando:

A: El cable de poder o el contacto ha sido dañado; u

B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

C: El aparato ha sido expuesto a la lluvia; o

D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

E: El aparato ha sido tirado o su cubierta ha sido dañada.

Table of Contents

1. Specifications

Technical Specifications

Power	110–125 VAC, 50–60 Hz, 2.5 Watts (idle), 4 Watts (ringing). REN 1.1B
Dimensions	1.5"H x 6.25"W x 9.5"D (3.8 x 15.9 x 24.1 cm)
Warranty	2 Years

2. Overview

The TL500A can be easily tailored to fit the needs of individual organizations or departments. A wide variety of remote site information systems can be accessed, and with its register programs, the system functions can be configured to meet the specifications of both calling and receiving modems and long distance switching time. By using programmable security codes (up to seven digits), 35 million possible combinations of codes prevent unauthorized access to the data devices.

3. TL500A 2.0 General Operation

The TL500A's routing function is based on DTMF tone detection. When a call is placed to the remote location, the TL500A detects the phone company's ringing voltage, goes off hook (answers), and begins a preliminary screening process. During this time, the TL500A is looking for CNG and DTMF tone-based routing instructions. For instance, if the TL500A hears the industry standard CNG tone generated by a calling fax, the call is immediately and automatically routed to the connected fax machine without disturbing the receiving party, ringing attached phones, or
ringing other attached devices.

Each device port of the TL500A has its own DTMF security code that can be used to protect any devices connected to the ports from unauthorized access. Each separate security code can be programmed to any number up to seven digits, including the * and # characters found on the telephone key pad. During an incoming call, if the TL500A detects the DTMF access code for a device port, the call is automatically routed to the correct device.

In the absence of fax tones or security codes, the TL500A begins to ring the call through to its default port (Device 1).

Outgoing calls can be placed from any device port as if it were attached to a dedicated line. Only one device at a time can actively use the telephone line. When the line is in use by one device, other devices attempting to access the line for an outgoing call will receive a busy signal. With special programming, this feature can be overridden in an emergency situation where an outgoing call must be placed quickly. (Reference Register 07 & 08 on page 11).

7-Segment Display— Displays the number of the Device Port in use or being addressed. Also will display register values when reading values from memory.

4. TL500A Program Registers

The TL500A has been designed to perform several operations that are integral to the proper function of your total communications system. The operations are controlled by programmable information that is stored in files called "registers." Each register contains enough memory to hold factory preset default values and "custom" values that allow the TL500A to operate to your specifications. The following is a short description of each register function, program capacity, and factory preset default values.

REGISTER 01 — Mode Flags

This register controls eight features or operating modes performed by the TL500A. Each "flag" or feature can be turned on/off and is programmed as a string of bit information. Zero (0) denotes "off" and one (1) denotes "on."

NOTE: When programming this register, you must enter all Flag (Bit) values. The Mode Flags are factory preset to the following:

Register 01 — Mode Flags

Flag	Function	Value	Description
Flag 1 (Bit 7)	Caller ID Store and Forward	1 (on)	CID will be captured when unit answers. CID data will be sent one time, after the first ring, when a device port is addressed.
Flag 2 (Bit 6)	Fax Tone Detect to Device 2	1 (on)	If fax tone is detected, call will be transferred to device 2.
Flag 3 (Bit 5)	Night Watch Mode	0 (off)	Allows calls to automatically be transferred to the specified port if not answered within a certain number of rings.
Flag 4 (Bit 4)	Additional Detect Time	0 (off)	Increases the time in which tones can be detected before ringing the default port by 4 seconds.
Flag 5 (Bit 3)	Protected Hook Flash	0 (off)	For any KSU that does not allow DTMF once a call is answered.

Register 01 — Mode Flags
(Continued from previous page)

Flag	Function	Value	Description
Flag 6 (Bit 2)	Busy Signal	1 (on)	Determines if a device trying to access the line when the line is already in use will hear a busy tone or dead air.
Flag 7 (Bit 1)	Enable Multi-Port Polling	0 (off)	Allows transfer to another device when communication with the first device addressed is complete.
Flag 8 (Bit 0)	Night Watch Mode to Device 3	0 (off)	Determines if night watch transfers are transferred to device 3. (Default night watch port is device 2.)

The operation modes (flags) can be programmed to meet the specifications that your system requires to function optimally.

REGISTER 02 — Cadence On Time

This register can range from 1 to 6 in one-half seconds and controls the amount of "ring" time in the ring cadence. Factory preset to 4 (2 seconds).

REGISTER 03 — Cadence Off Time

This register can range from 1 to 15 in one-half seconds and controls the length of silent time between each ring. Factory preset to 8 (4 seconds).

REGISTER 04 — Maximum Number of Rings to a Device

This register can range from 1 to 99 and controls the amount of rings sent to a device port. Factory preset to 8 rings.

REGISTER 05 — Night Watch Mode Trip Rings

This register contains the number of rings that are required to trip the Night Watch Mode function. After an incoming call has been screened, the number of rings to the phone port are counted, and if the phone is not answered in "X" rings, this call and all future calls will be diverted to the Device port 2. This register can range from 1 to 15. Factory preset is 5 rings.

REGISTER 06 — Night Watch Mode Rings

This Register contains the number of rings to the phone device port after Night Watch Mode (Register 05) has been activated. This number is usually less than register 05 but can range from 1 to 15. Factory preset is 2 rings.

REGISTER 07 — Emergency Barge In

This register contains the mask that determines if Devices 1, 2, 3, and 4 can barge in and gain access to the telephone line by going off-hook during a call. The four mask bits can be set to any combination of values, allowing all, some, or none of Devices 1 through 4 access to the line during an emergency or to just have priority.

NOTE: When programming this register, you must enter all Flag (Bit) values. The flags are preset to the following:

Flag 1 (Bit 3) Device 4 Barge-in Mask 0 (off)

Flag 2 (Bit 2) Device 3 Barge-in Mask 0 (off)

Flag 3 (Bit 1) Device 2 Barge-in Mask 0 (off)

Flag 4 (Bit 0) Device 1 Barge-in Mask 0 (off)

Register 8 must also be set to a positive number to activate barge-in.

REGISTER 08 — Barge-In Time

This register contains the amount of time that a telephone receiver must be held off-hook to "barge-in" on a call. The range of this register is 0 (off) to 15 with a 2-second multiplier for each digit. Factory preset to 0 (off).

REGISTER 09 — Security Programming Time Window

This register contains the number of minutes that the TL500A will accept the programming code once power has been applied to the unit. The range of this register is 0 to 15. Factory preset to 0 (allows programming at all times).

REGISTER 10 — Seizure Time

This register contains the maximum number of seconds the TL500A will hold the phone line, during a multiple polling sequence after a device has been disconnected. This register ranges from 10 to 99. Factory preset to 25 (no ring back is provided to caller during this time).

NOTE: TL500A-9 uses Registers 1–15 plus 26–29, TL500A-5 uses Registers 11–15, and TL500A-3 uses Registers 11–13 only for Device Codes.

REGISTER 11 — Security Access Code for Device Port 1

Contains the security access code for device port 1. This register holds up to 7 digits ranging from 0 to 9, * and #. Factory preset to 11.

REGISTER 12 — Security Access Code for Device Port 2

Contains the security access code for device port 2. This register holds up to 7 digits ranging from 0 to 9, * and #. Factory preset to 22.

REGISTER 13 — Security Access Code for Device Port 3

Contains the security access code for device port 3. This register holds up to 7 digits ranging from 0 to 9, and #. Factory preset to 33.

REGISTER 14 — Security Access Code for Device Port 4

Contains the security access code for device port 4. This register holds up to 7 digits ranging from 0 to 9, and #. Factory preset to 44.

REGISTER 15 — Security Access Code for Device Port 5

Contains the security access code for device port 5. This register holds up to 7 digits ranging from 0 to 9, * and #. Factory preset to 55.

REGISTER 16 — Multiple Polling Code

This register contains the multiple polling code (MPC). The MPC should be placed at the beginning or end of a security access code. After a device has completed its communication and if the correct MPC is detected, the TL500A will seize the line. This process allows multiple polling with one call. The register must contain two digits. Factory preset to ##.

REGISTER 26 — Security Access Code for Device Port 6

Contains the security access code for device port 6. This register holds up to 7 digits ranging from 0 to 9, * and #. Factory preset to 66.

REGISTER 27 — Security Access Code for Device Port 7

Contains the security access code for device port 7. This register holds up to 7 digits ranging from 0 to 9, * and #. Factory preset to 77.

REGISTER 28 — Security Access Code for Device Port 8

Contains the security access code for device port 8. This register holds up to 7 digits ranging from 0 to 9, * and #. Factory preset to 88.

REGISTER 29 — Security Access Code for Device Port 9

Contains the security access code for device port 9. This register holds up to 7 digits ranging from 0 to 9, * and #. Factory preset to 99.

*WARNING: For registers 11 through 15 or 26 through 29, DO NOT program any of the security access codes to segments of the programming code (**7764#).*

TO ENTER PROGRAMMING MODE

To enter programming mode, pick up the receiver of the phone that is plugged into device port 1 and dial **7764#. After dialing the string, three quick, high beeps should be heard. This affirms entry into the programming menu.

To program individual registers, press the register number you wish to program and the desired digits immediately in a contiguous string (as an example: 023 to set register 02 to a value of 3). If an error in entry is detected, a single low pitch beep will be heard followed by a short space, then three quick, high beeps. The three quick high beeps tell you to proceed.

TO RESET ALL REGISTER VALUES TO FACTORY PRESET

Press 60 while in programming mode to reset all registers to factory defaults.

TO READ VALUES FROM MEMORY

To read all values, press 99 on your telephone key pad. To read the value of a single register, press * and the two-digit register number.

TO WRITE PROGRAMS TO MEMORY

Press 80 on your telephone key pad. This should always be done when you are satisfied with the information you have programmed.

TO EXIT PROGRAMMING MODE

Press 90 on your telephone key pad.

IMPORTANT: The TL500A MUST be the first device on the phone to ensure accurate routing. In a rollover sequence, install the TL500A on the last line of rollover.

NOTE: Device port #2 is the default fax port (can be used as a modem port).

Black Box Tech Support: FREE! Live. 24/7.

Great tech support is just 30 seconds away at
724-746-5500 or blackbox.com.

BLACK BOX®
NETWORK SERVICES

About Black Box

Black Box provides an extensive range of networking and infrastructure products. You'll find everything from cabinets and racks and power and surge protection products to media converters and Ethernet switches all supported by free, live 24/7 Tech support available in 30 seconds or less.

TL500A, version 2